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Ethn Health. 2019 April ; 24(3): 271–286. doi:10.1080/13557858.2017.1315378.**Perceived discrimination and depressive symptoms among US Latinos: the modifying role of educational attainment****Julia B. Ward^{a,b}, Lydia Feinstein^{a,c}, Anissa I. Vines^a, Whitney R. Robinson^{a,b}, Mary N. Haan^d, and Allison E. Aiello^{a,b}**^aDepartment of Epidemiology, Gillings School of Global Public Health, University of North Carolina, Chapel Hill, 135 Dauer Drive, 2101 McGavran-Greenberg Hall, Chapel Hill, NC 27599-7435, USA, T: (919) 966-7430^bCarolina Population Center, University of North Carolina, Chapel Hill, 206 West Franklin St., Rm. 208, Chapel Hill, NC 27516, USA, T: (919) 962-6144^cSocial & Scientific Systems, Inc., 4505 Emperor Blvd, Suite 400, Durham, NC 27703, USA, T: (919) 287-4300^dDepartment of Epidemiology and Biostatistics, University of California, San Francisco, 550 16th Street, 2nd Floor, San Francisco, CA 94158-2549, USA, T: (415) 476-2300**Abstract**

Objective—Despite growing evidence that discrimination may contribute to poor mental health, few studies have assessed this association among US Latinos. Furthermore, the interaction between discrimination and educational attainment in shaping Latino mental health is virtually unexplored. This study aims to examine the association between perceived discrimination and depressive symptoms and the modifying role of education among a population of Mexican-origin adults.

Design—We utilized population-based data from 629 Mexican-origin adults (mean age=52.8 years) participating the Niños Lifestyle and Diabetes Study (2013–2014). Perceived discrimination was defined as responding “sometimes” or “often” to at least one item on the 9-item Everyday Discrimination Scale. High depressive symptoms were defined as scoring ≥10 on the CESD-10. We used log-binomial and linear-binomial models to estimate prevalence ratios (PR) and prevalence differences (PD), respectively, of high depressive symptoms for levels of perceived discrimination. Final models were adjusted for age, sex, education, cultural orientation, and nativity. General estimating equations were employed to account for within-family clustering.

Results—Prevalence of perceived discrimination and high depressive symptoms were 49.5% and 29.2%, respectively. Participants experiencing discrimination had higher depressive symptom prevalence than those never or rarely experiencing discrimination [PR=1.94, 95% confidence

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interval (CI): 1.46–2.58; PD=0.19, 95% CI: 0.12–0.27]. The strength of this association varied by education level. The association between discrimination and depressive symptoms was stronger among those with >12 years of education (PR=2.69; PD=0.24) compared to those with 12 years of education (PR=1.36; PD=0.09).

Conclusion—US Latinos suffer a high burden of depressive symptoms, and discrimination may be an important driver of this burden. Our results suggest that effortful coping strategies, such as achieving high education despite high perceived discrimination, may magnify discrimination’s adverse effect on Latino mental health.

Keywords

Discrimination; depressive symptoms; Latinos; socioeconomic status; education; mental health

Background

In the United States (US), Latinos suffer a disproportionate burden of poor mental health outcomes. Latinos are more likely to suffer from depression compared to non-Latino Whites, and prevalence of high depressive symptoms is estimated to be 20.7% and 32.8% for Latino men and women, respectively (Alegria et al. 2008; Brennan et al. 2005; Fiscella et al. 2002; Howell et al. 2005; Wassertheil-Smoller et al. 2014). Research has shown that discrimination may play a key role in the mental health of historically marginalized populations, such as African and Asian Americans (Kessler, Mickelson, and Williams 1999; Martin, Tuch, and Roman 2003; Broman, Mavaddat, and Hsu 2000; Jackson et al. 1996; R. M. Lee 2005; Mossakowski 2003), and more recently there exists a growing number of studies among Latinos linking discrimination and depression (D. L. Lee and Ahn 2011; Gee et al. 2006; Araujo 2006; Flores et al. 2008; Finch, Kolody, and Vega 2000). While these existing studies provide some insight into the association between discrimination and depression, they have not explored potential buffering mechanisms that may offset the influence of discrimination on depression among Latinos.

Socioeconomic position (SEP) is closely tied to both discrimination and depression (Flores et al. 2008; Lorant et al. 2003). It is generally thought that those of high SEP are less likely than those of low SEP to experience the adverse impact of discrimination on mental health. This is because higher SEP may buffer discrimination’s adverse impact through higher educational attainment, increased social capital, higher locus of control and self-esteem, and better access to treatment (Walker et al. 2012; Lorant et al. 2003). However, it could also be argued that those of high SEP may be more likely to experience discrimination given that some higher educational environments or workplaces associated with higher SEP may lack diversity and social support for minorities (Whittaker, Montgomery, and Martinez Acosta 2015; Wei Zhang and Hong 2013; Hagan, Shedd, and Payne 2005; Seaton and Yip 2009; Stainback and Irvin 2012; Pager and Shepherd 2008; Mays, Coleman, and Jackson 1996). In these higher SEP environments, minorities exposed to discrimination may be more likely to engage in effortful coping (Wei Zhang and Hong 2013; James, Hartnett, and Kalsbeek 1983). The concept of effortful coping is defined as the expenditure of high levels of effort in order to handle and overcome barriers to achievement, such as discrimination, typically faced by disadvantaged populations (James, Hartnett, and Kalsbeek 1983). This strategy of

expending enormous amounts of effort in order to overcome one's disadvantaged position in society often has adverse impacts on one's physical and mental health (James, Hartnett, and Kalsbeek 1983). For example, the effort required to achieve high educational attainment in the face of high discrimination may have detrimental physiological and psychological costs, resulting in a stronger association between discrimination and mental health among more highly educated individuals (Wei Zhang and Hong 2013). Given that discrimination may differentially impact those of varying SEP levels, examining the interaction between SEP and discrimination is of great importance.

The results of the few prior studies examining the potential interaction of SEP and discrimination have been mixed (Finch, Kolody, and Vega 2000; Hudson et al. 2015; Neighbors, Njai, and Jackson 2007; Wei Zhang and Hong 2013). One study found no such interaction among an African American population, while another study found that the association between discrimination and psychological distress among Asian Americans was stronger among those with a college education. Only one study to our knowledge has examined this interaction with regard to depression in US Latinos (Finch, Kolody, and Vega 2000). This study found that higher levels of perceived discrimination due to the participants' ethnicity was positively associated with depressive symptoms. In this study, the association was modified by nativity, language use, sex, and country of education; however, no interaction was found between education and discrimination. Additionally, this study was limited in that it focused specifically on discrimination due to being of Mexican origin and did not utilize a validated scale or examine the effects of discrimination on other fronts. The mixed findings of these prior studies indicate that further investigation into the interaction between SEP and discrimination is warranted.

Using data from the Niños Lifestyle and Diabetes Study (NLDS), we examined the cross-sectional association between perceived discrimination and depressive symptoms among Latino adults. We additionally assessed whether this association was modified by level of SEP as defined by educational attainment. We hypothesized that prevalence of depressive symptoms would be greater in adult Latinos who perceived high discrimination compared to those experiencing low perceived discrimination and that the impact of discrimination would vary by levels of education.

Methods

Study population

Participants in this analysis were members of the Niños Lifestyle & Diabetes Study (NLDS) whom were followed from March 2013 to November 2014 (Ward et al. 2016). The NLDS cohort comprises biological adult offspring, grandchildren, and other referred biological relatives of participants in the Sacramento Area Latino Study on Aging (SALSA), which took place from 1998 to 2008 and has been previously described (Haan et al. 2003). Any living adult offspring (aged 18+ years) of the original 1789 SALSA participants were eligible for participation in the study. In addition, NLDS participants were given the opportunity during their interviews to refer to the study other immediate family members living in the greater Sacramento, CA area. Study participants were predominantly of Mexican origin but will here forth be referred to as Latinos.

Trained bilingual interviewers collected baseline and follow-up data at two time points: March–November 2013 and May–November 2014. Each wave of data collection included: (I) a 30-minute phone interview, and (II) a 2-hour home visit that included an interview, anthropometric measurements, blood draw, and inventory of medication usage. All participants who completed the baseline phone interview (N=670) were eligible for inclusion in this analysis. Participants who did not report information on discrimination, depressive symptoms, education, age, sex, nativity, or degree of acculturation were excluded, leaving a total analytic sample of 629 individuals.

Measures

Assessment of high depressive symptoms—The outcome of interest was depressive symptoms, measured by the Center for Epidemiological Studies Depression Scale-10 (CESD-10). The CESD-10 is a 4-point Likert-type scale that assesses the extent to which an individual experienced depressive symptoms during the prior week. This scale was derived from the full-length 20-item CES-D, a widely used self-report survey designed to measure depressive symptomology in the general population (Radloff 1977). The shorter 10-item scale was developed to alleviate participant burden in older adults (Kohout et al. 1993). The CESD-10 has been shown to correspond closely to the full-length version and to have high internal consistency and test-retest reliability (Kohout et al. 1993; Andresen et al. 1994; Irwin, Artin, and Oxman 1999). As suggested by previous validation studies utilizing this shortened scale, participants scoring ≥ 10 on the CESD-10 were considered to have high depressive symptoms (Wendy Zhang et al. 2012; Andresen et al. 1994).

Assessment of perceived everyday discrimination—The exposure of interest was perceived everyday discrimination assessed by the 9-item Everyday Discrimination Scale (Williams et al. 1997), which was developed from in-depth qualitative studies of discrimination (Essed 1990; Essed 1991). The Everyday Discrimination Scale asks participants to indicate the frequency (0=never, 1=rarely, 2=sometimes, 3=often) with which they experience various forms of mistreatment in their daily lives; examples of mistreatment included being treated with less courtesy or respect than others, receiving poorer service than others, being called names or insulted, or being threatened or harassed. As recommended by previous studies, we defined high everyday discrimination as responding “sometimes” or “often” to at least one of the items and low everyday discrimination as responding either “never” or “rarely” to all items on the scale (Schulz et al. 2006; Brown et al. 2006; Lewis et al. 2010). This dichotomization was further appropriate for our dataset due to the distribution of responses; the vast majority of observations had a score of 0 or 1 when a continuous discrimination score was created by summing all 9 responses.

Assessment of socioeconomic position—The NDLS collected data on the income and educational attainment of participants. Income and education were very highly correlated in our dataset, and as a result we chose education as our primary measure of socioeconomic position. This is consistent with other studies among the Latino population (Zeki Al Hazzouri et al. 2015; Albrecht and Gordon-Larsen 2014). Further, education is often the preferred measure since it not only predicts future occupation and wages, but it is also less influenced by age-related changes in these characteristics (Laaksonen et al. 2005;

Adler and Newman 2002). We classified educational attainment for NLDS participants as low (< 12 years) or high (>12 years). These education cut points were supported by other studies of similar populations (Zeki Al Hazzouri et al. 2015; Albrecht and Gordon-Larsen 2014).

Other covariates—Nativity was based on participant report of birth country. NLDS participants were classified as either US-born or foreign-born (in Mexico or another Central or South American country). To measure degree of cultural orientation, we utilized a version of the Acculturation Rating Scale for Mexican-Americans II (ARSMA-II), an established measure of cultural orientation that comprehensively assesses the dynamic acculturative process along multiple dimensions, including ethnic identity and co-ethnic social ties (Cuellar, Arnold, and Maldonado 1995). This validated scale comprises the Anglo Orientation Subscale (AOS) and the Mexican Orientation Subscale (MOS). As recommended by Cuellar et al. in their validation of the scale, the mean MOS was subtracted from the mean AOS to create an overall acculturation score with higher scores indicating lower Latino cultural orientation and a score of 0 indicating equal Anglo- and Latino-orientation (Cuellar, Arnold, and Maldonado 1995). We defined high Latino cultural orientation as an overall acculturation score of < 0 and high US cultural orientation as a score of ≥ 0. Other covariates utilized in this analysis included age and sex of the NLDS participant.

Statistical Analysis

To quantify the association between perceived discrimination and high depressive symptoms, we used linear-binomial models to estimate prevalence differences and log-binomial models to estimate prevalence ratios. Directed acyclic graphs (DAG) were used to identify potential confounders of the discrimination-depressive symptom association and final overall models adjusted for age, sex, education, nativity, and cultural orientation (Greenland, Pearl, and Robins 1999). To determine if the discrimination-depressive symptom association differed across levels of education, we tested an education-discrimination interaction term and also examined effect estimates stratified by education level. The adjustment set for education stratified estimates included age, sex, nativity, and cultural orientation. Given the close link between discrimination and nativity status among US Latinos and the interaction between these two variables found in other studies (Finch, Kolody, and Vega 2000), we also assessed the potential modifying role of nativity on the association between discrimination and depressive symptoms. General estimating equations were used to account for within-family clustering (Liang and Zeger 1986). All analyses were carried out in SAS 9.4 (SAS Institute, Inc., Cary, NC).

Results

Overall, the study population had a mean age of 52.8 years, 37.6% were male, and 63.2% had completed >12 years of education (Table 1). The majority (75.4%) of participants were US-born, and 32.2% were of high Latino orientation. High everyday perceived discrimination was reported by 49.5% of the study participants, and the overall prevalence of high depressive symptoms was 29.2%. Compared to participants perceiving low levels of

discrimination, those perceiving high levels of discrimination were slightly younger and were more likely to be male, be foreign-born, have high Latino cultural orientation, and have 12 years of education.

Table 2 presents the overall and education-stratified prevalence ratios (PR) and prevalence differences (PD) of high depressive symptoms, utilizing low perceived discrimination as the reference category. Model 1 adjusts for age, sex, and family-level clustering, and model 2 further adjusts for education level, nativity, and cultural orientation. In the fully adjusted model, the prevalence of high depressive symptoms among participants perceiving high discrimination was 1.94 [95% confidence interval (CI): 1.46–2.58] times the prevalence of high depressive symptoms among those perceiving low discrimination. Similarly, prevalence differences showed a positive association between perceived discrimination and high depressive symptoms in absolute terms (PD = 0.19, 95% CI: 0.12–0.27).

As shown in Table 2 and depicted visually in Figure 1, education level modified both the prevalence ratio and prevalence difference of the association between perceived discrimination and high depressive symptoms (respective interaction p -values = 0.01 and 0.05). On the multiplicative scale, there was a stronger association between discrimination and depressive symptoms among those with high education levels (PR = 2.69, 95% CI: 1.80–4.03) compared to the association among those with low education levels (PR = 1.36, 95% CI: 0.93–1.98). In other words, among those with >12 years of education, the prevalence ratio for depressive symptoms was 1.98 times the prevalence ratio among those with 12 years of education. A similar interaction between education and discrimination was found on the additive scale: among participants with high education levels, the prevalence of high depressive symptoms was 24 (95% CI: 15–32) percentage points higher among those perceiving high discrimination compared to those perceiving low discrimination; while among participants with low education levels, the prevalence of high depressive symptoms was 9 (95% CI: –3–22) percentage points higher among those perceiving high discrimination compared to those perceiving low discrimination. Finally, we found that nativity did not modify the association between discrimination and depressive symptoms among NLDS participants, with interaction term p -values of 0.6865 on the multiplicative scale and 0.9864 on the additive scale.

Discussion

This study assessed the impact of everyday perceived discrimination on depressive symptoms among a sample of Latino adults, comprised predominantly of Mexican Americans. Depressive symptoms were highly prevalent in our study population, with 29.2% having a CESD-10 score ≥ 10 . Those perceiving higher levels of discrimination in their everyday lives were more likely to experience depressive symptoms than those perceiving lower levels of discrimination. Further, the effect of discrimination on depressive symptoms was stronger among those with a high level of education.

Our overall findings of higher depressive symptom prevalence among those experiencing higher levels of perceived discrimination adds to the established literature documenting the detrimental health effects of discrimination in minority groups (Dolezsar et al. 2014;

Williams 2000; Williams and Williams-Morris 2000; Kessler, Mickelson, and Williams 1999; Williams 1999). Racial and ethnic health disparities in the US are theorized to largely be a product of socioeconomic and structural disadvantages faced by racial minorities (Flores et al. 2008); these disadvantages create a climate of chronic stress, internalized oppression, and barriers to needed healthcare that result in poorer health (Williams and Williams-Morris 2000; Jones 2000; Krieger 1999; Clark et al. 1999). Mental health status is particularly vulnerable to the negative effects of discrimination as a consequence of diminished self-efficacy and increased chronic stress (Dion, Dion, and Pak 1992). Discrimination may block the ability to achieve one's goals, and psychological distress can result from discord between one's ambitions and the capacity to fulfill these goals (Dressler 1988; James 1994; Neighbors et al. 1996; Sellers and Shelton 2003).

Chronic stress, a possible consequence of discrimination exposure, is thought to impact depression by disrupting components of the body's physiological response to stress (Ehlert, Gaab, and Heinrichs 2001; Tafet and Bernardini 2003; Vyas, Pillai, and Chattarji 2004). For example, stress exposure has been shown to lead to hyperactivity of the amygdala and the hypothalamic-pituitary-adrenal axis and to increase secretion of cortisol and corticotrophin-releasing hormone, all of which are components of the physiological stress system that have been individually associated with depression (Tafet and Bernardini 2003; Chrousos and Gold 1992; Drevets 2001). Ethnic minority groups, such as US Latinos, often live in a state of sustained heightened vigilance due to their membership in multiple disadvantaged social categories, such as having lower SEP, being an immigrant, working in lower income occupations with little opportunity for upward mobility, and simply being an ethnic minority (Flores et al. 2008; Slavin et al. 1991). Membership in multiple disadvantaged categories can lead ethnic minorities to experience discrimination on multiple fronts, and this sustained stress exposure may result in poor mental health outcomes.

A growing body of literature has documented the mental health effects of discrimination in Latino populations specifically (Finch, Kolody, and Vega 2000; Flores et al. 2008; Gee et al. 2006; Basáñez et al. 2013; Behnke et al. 2011; Cano et al. 2016; Davis et al. 2016; Delgado et al. 2011; Roblyer et al. 2016). Our results support the findings of these prior studies, which suggest that Latinos in the US may be particularly vulnerable to discrimination's adverse effects on mental health due to the multiple avenues by which discrimination may enter their daily lives. The Latino community faces immense socioeconomic disparities in the US, with lower overall educational attainment, higher high school dropout rates, lower individual income, and a smaller proportion of insured individuals than all other racial/ethnic groups (Motel and Patten 2013). Additionally, compared to other US minority groups, many US Latinos experience unique cultural stressors that are closely tied to the experience of discrimination, such as the immigration process, issues with legal status, language differences, and acculturative stress (Cervantes and Castro 1985). Recent immigrants are at greater risk of discrimination exposure and make up a large proportion of the US Latino community (Motel and Patten 2013); future studies should assess if this population is especially susceptible to adverse health consequences of discrimination-related stress.

Our study is the first in US Latinos to demonstrate that the discrimination-depressive symptom association varies by educational level. Our results contradict those of the only

other previous study among a Latino population examining the interaction between education and discrimination (Finch, Kolody, and Vega 2000). This previous study focused specifically on discrimination due to being of Mexican origin and did not utilize a validated scale or examine the effects of discrimination on other fronts, while our study utilized the validated and more general Everyday Discrimination Scale. Our study does, however, concur with the findings from a previous study among Asian Americans which utilized a similar discrimination metric and found a stronger discrimination-psychological distress association among those with a college education (Wei Zhang and Hong 2013). Higher education levels may represent increased opportunities for exposure to racism and discrimination as Latinos navigate higher educational or economic environments where they may lack social support as a minority. Individuals with higher levels of education may be more likely to live or work in environments dominated by non-Latino Whites, thereby potentially increasing their exposure to or awareness of discrimination. If these more highly-educated individuals believe that discrimination could be affecting their upward mobility despite their high education, they may be at higher risk of poor mental health as a result of the perceived discrimination.

The observed interaction between discrimination and education level is also supportive of the concept of effortful coping, a strategy utilized by marginalized populations to overcome social or economic disadvantage by expending high amounts of effort (James et al. 1987). In our study population, education may be a surrogate measure for the likelihood of effortful coping; we would expect the association between discrimination and depressive symptoms to be stronger in those with high education given the physiological and psychological costs that result from the immense effort required to achieve high education in spite of high perceived discrimination. The modification analysis indicated both sub-additive and sub-multiplicative joint effects of discrimination and education, supporting the hypothesis of effortful coping. While effortful coping has been thought to play a role in depression (Neighbors, Njai, and Jackson 2007), results from past studies have been mixed, with a modification effect present in Whites, Caribbean Blacks, and Asian Americans but absent in African Americans and a Latino community (Neighbors, Njai, and Jackson 2007; Finch, Kolody, and Vega 2000; Hudson et al. 2015; Wei Zhang and Hong 2013). Our results contradict previous findings and demonstrate that such a phenomenon may, in fact, be present among certain Latino communities.

From another perspective, discrimination could also be considered a modifier of the association between educational attainment and depressive symptoms. From this angle, everyday discrimination may be seen as negating the beneficial buffering effect of education. In our overall study population, the highly educated fared better in terms of depressive symptoms; however, the perception of a high level of discrimination minimized this education benefit.

This study had a number of strengths, including data drawn from a population-based sample and the use of trained bilingual interviewers and validated surveys to collect discrimination, depressive symptom, and cultural orientation data. Additionally, while most previous studies report odds ratios of discrimination effects, we presented prevalence ratios and prevalence differences since these measures are more directly interpretable and allow for better

estimation of public health burden (Lynch et al. 2006). Compared to odds ratios, prevalence ratios were more appropriate for our research question given that depressive symptoms were highly prevalent in our study population and that odds ratios may overestimate the exposure effect in this scenario. Furthermore, given that absolute and relative measures may produce different conclusions (Lynch et al. 2006), we chose to report both difference and ratio estimates. Prevalence differences are more appropriate for demonstrating absolute public health impact of depressive symptoms and better reflect the total population health burden of a health disparity (Lynch et al. 2006). However, examining the mechanisms underlying relative inequalities in depressive symptoms can also provide insights on novel and possibly reversible risk factors that could reduce mental health disparities (Lynch et al. 2006). Ratios are also the more commonly reported estimate in the existing literature examining discrimination and depressive symptoms; therefore, describing the association in relative terms facilitates comparisons between the findings of this study and those of previous studies.

Our study also had limitations. Due to the cross-sectional nature of the baseline phone interview data, we are unable to disentangle the temporal direction of the discrimination-depressive symptom association; our observed results may be a consequence of reverse causality where those who are already depressed perceive higher discrimination as a result of their mental status. Additionally, study participants resided in California's Sacramento Valley and were predominantly of Mexican origin. Consequently, we cannot draw broad conclusions regarding depressive symptom prevalence among all US Latinos given that our findings may not apply to other Latino subpopulations. Nevertheless, given that Mexican Americans are the largest and fastest growing Latino subgroup in the US, examining factors associated with depression in this subgroup is of particular importance (Motel and Patten 2013). Furthermore, the dichotomization of the discrimination and education variables may appear simplistic and incapable of capturing the true nature of the underlying constructs. However, we conducted sensitivity analyses treating discrimination and education as continuous and using different categorizations, and these analyses were supportive of dichotomization and suggested that the study results were robust to different categorizations and functional forms of the discrimination and education variables. We carried out further sensitivity analyses utilizing different educational cut points, such as obtaining at least a Bachelor's degree, and these analyses suggested that the cut point at <12 years of education was the most meaningful.

In conclusion, we observed a strong association between perceived discrimination and increased depressive symptoms among adult US Latinos, predominantly of Mexican origin. Education modified this discrimination-depressive symptom association, suggesting that the mental health consequences of discrimination are especially salient among highly educated Latinos. These results provide evidence of the high psychological costs of exposure to perceived discrimination and suggest that effortful coping may play a key role in mental health of US Latinos. The interaction between discrimination and SEP has been influenced by years of segregation, exclusionary policies, and unequal allocation of resources. Yet, these interactions are understudied among Latinos. Our study contributes to a more comprehensive understanding of the etiology of depressive symptoms among the Latino

community and may help to inform interventions targeting those at greatest risk of depression.

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Key messages

- Prevalence of perceived discrimination and high depressive symptoms were 49.5% and 29.2%, respectively, among study participants.
- Perceiving a high level of discrimination was associated with high depressive symptoms among US Latinos.
- The association between perceived discrimination and depressive symptoms was stronger among the more highly educated.

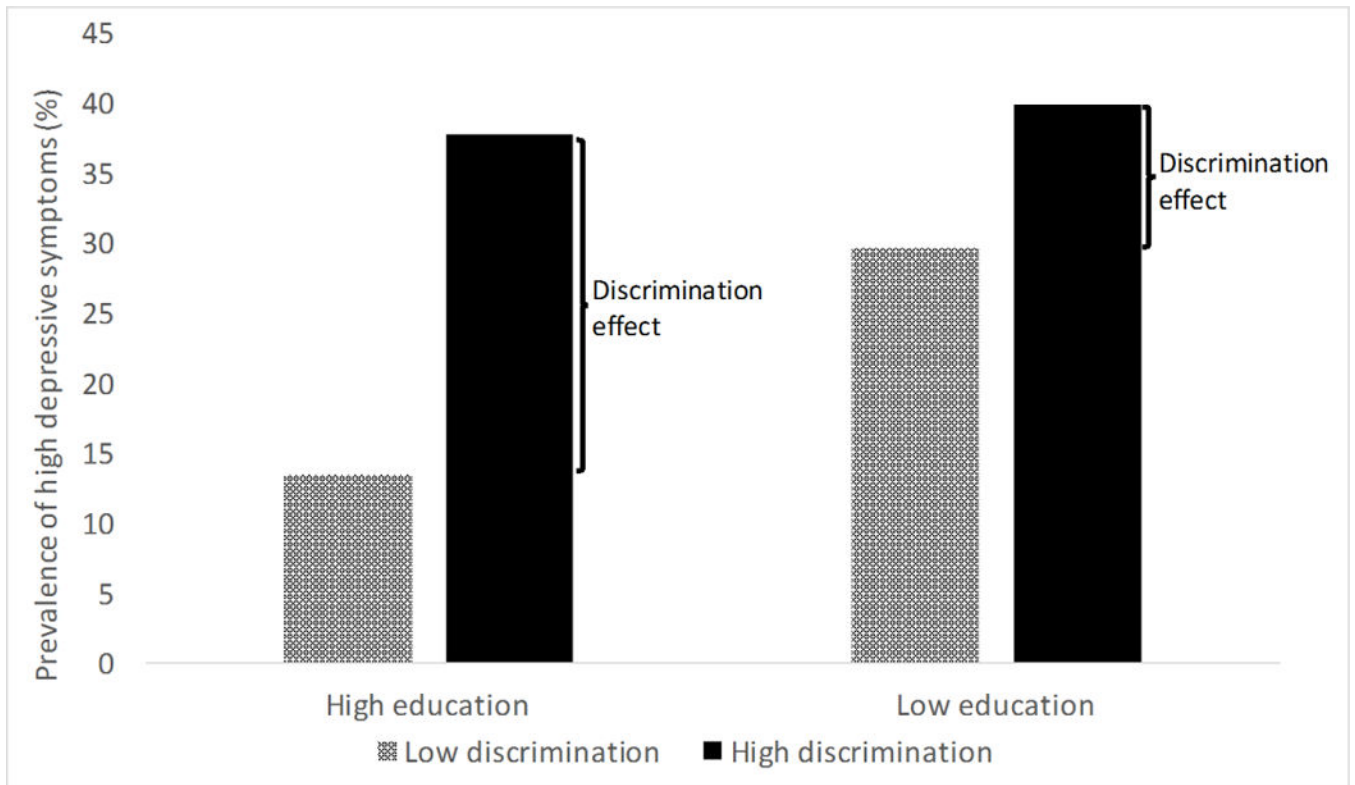


Figure 1. The association between perceived discrimination and high depressive symptoms by level of educational attainment among participants in the Niños Lifestyle & Diabetes Study (2013–2014)

Characteristics of participants in the Niños Lifestyle & Diabetes Study (2013–2014), overall and stratified by perceived discrimination

Table 1

Characteristics	Overall		Discrimination ^d	
	n = 670	%	Low n = 333	High n = 326
<i>Age</i>				
18–24	26	3.9	7	19
25–34	39	5.9	11	27
35–44	51	7.7	21	30
45–54	229	34.6	117	111
55–64	233	35.3	128	100
65–74	66	10.0	36	27
≥75	17	2.6	10	7
<i>Sex</i>				
Male	252	37.6	114	135
Female	418	62.4	219	191
<i>Country of birth</i>				
United States	505	75.4	254	245
Mexico	146	21.8	73	68
Other	19	2.8	6	13
<i>Cultural orientation^b</i>				
High Latino orientation	216	32.2	101	110
High US orientation	454	67.8	232	216
<i>Education (years)</i>				
<12	87	13.4	36	48
12	152	23.4	73	77
13–16	331	50.9	172	156
>16	80	12.3	43	36
<i>Perceived Everyday Discrimination</i>				
High	326	49.5		
Low	333	50.5		

Characteristics	Discrimination ^d		
	Overall	Low	High
	<i>n</i> = 670	<i>n</i> = 333	<i>n</i> = 326
	%	%	%
Depressive symptoms ^e			
High	193	64	126
	29.2	19.3	39.0
Low	469	268	197
	70.9	80.7	61.0

^aHigh discrimination defined as responding “sometimes” or “often” to at least one item on the Everyday Discrimination Scale

^bHigh Latino-orientation defined as an ARSMA-II score <0

^cHigh depressive symptoms defined as a CESD-10 score ≥ 10 . Mean \pm SD of CESD-10 scores were 7.4 \pm 5.9 for the overall sample, 8.8 \pm 6.1 for those perceiving high discrimination, and 6.0 \pm 5.4 for those perceiving low discrimination.

Table 2

Prevalence ratios and differences for high depressive symptoms among participants in the Niños Lifestyle & Diabetes Study (2013–2014)^a, overall and stratified by education level

	Prevalence Ratio (95% CI)			Prevalence Difference (95% CI)		
	Crude	Model 1 ^b	Model 2 ^c	Crude	Model 1	Model 2
Overall	2.02 (1.56–2.62)	1.98 (1.50–2.60)	1.94 (1.46–2.58)	0.20 (0.13–0.27)	0.19 (0.12–0.27)	0.19 (0.12–0.27)
Education level						
Low	1.34 (0.94–1.93)	1.32 (0.90–1.93)	1.36 (0.93–1.98)	0.10 (–0.02–0.22)	0.09 (–0.03–0.22)	0.09 (–0.03–0.22)
High	2.79 (1.90–4.11)	2.73 (1.82–4.09)	2.69 (1.80–4.03)	0.24 (0.16–0.32)	0.24 (0.15–0.32)	0.24 (0.15–0.32)

^aComparing those perceiving high levels of discrimination to those perceiving low levels of discrimination

^bAdjusted for age (continuous), sex, and family-level clustering

^cAdjusted for age (continuous), sex, education level, nativity, cultural orientation, and family-level clustering

^dTesting the discrimination-education interaction using model 2